The Influence of Emotion Regulation and Psychological Flexibility as Features in Resilience

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Acknowledgments

I would like to thank Dr. Elizabeth Glaeser for her endless support during this project as well as her patience with the research process. I would also like to thank Dr. Richard Gallagher. His passion and empathy were a constant comfort and helped me remember why I go through the effort.

Existing research discussing Resilience-Based Interventions (RBI) for the treatment of Autism Spectrum Disorder (ASD) has placed considerable emphasis on improving the resilience of families with autistic children, highlighting the cultivation of protective factors and the need for social support networks in the sometimes difficult process of raising these children. However, there is a noticeable gap in research when it comes to interventions and strategies aimed at directly improving the resilience of these autistic children. The few interventions developed for this group have focused almost exclusively on improving resilience by strengthening the protective factor of social support through behavioral modification and social skills training, although these results have been mixed. This paper argues that it would instead be prudent to integrate aspects of Acceptance and Commitment Therapy (ACT) to strengthen Psychological Flexibility (PF) as well as mindfulness practices that promote healthy Emotion Regulation (ER) in ASD youth into RBIs.

Key Words: Resilience, Resilience-Based Interventions, Autism Spectrum Disorder, emotion regulation, psychological flexibility, behavioral rigidity, acceptance and commitment therapy, meltdown

Conflict of Interest: There are no conflicts of interest to report.

Introduction

Autism Spectrum Disorder (ASD) is a neurodevelopmental disorder characterized by difficulties in emotion regulation (ER) and behavioral rigidity. The prevalence of ASD has been increasing over the years, with recent estimates suggesting it has a prevalence of 1 in 36 children in the United States (Maenner et al., 2020). Individuals with Autism Spectrum Disorder encounter a range of challenges that significantly impact their lives, such as extreme difficulty in regulating responses to stress, greatly increased sensory sensitivities, and executive functioning challenges (Kaboski, McDonnel, and Valentino, 2017). Additionally, autistic adolescents frequently use maladaptive ER strategies, the most frequent of which is avoidance, wherein they make efforts to abstain from situations they find uncomfortable or distressing (Mazefsky and White, 2014). Avoidance in those with ASD is also worsened by behavioral rigidity and spurred on by psychological inflexibility in the attempt to avoid the stress of new situations through strong adherence to familiar routines. ER and Psychological Flexibility (PF) are foundational aspects of resilience and, as they are frequently restricted in those with ASD, make resilient behavior especially difficult in this population. This literature review examines the current state of Resilience-Based Interventions (RBIs) for ASD youth which focus primarily on social skills training, the promising results of a mindfulness and Cognitive Behavioral Therapy (CBT) based intervention called the EASE Program in improving ER, and the successes of various Acceptance and Commitment Therapy (ACT) programs serving to decrease behavioral rigidity and strengthen PF in patients with ASD. The hope is that the implementation of therapies emphasizing these two foundational factors could be integrated into RBIs to minimize avoidance and allow ASD youth to have better responses to that which they previously avoided.

Social Skills Training and Aggression: The Current State of ASD-Specific RBIs

Within current literature, success in resilience-based treatments for autistic youth has been limited to reducing aggressive behaviors (Shochet et al., 2022; Mackay, 2017; Habeyeb et al., 2017). Although these results were initially promising, they primarily viewed aggression more so as a product of poor social skills and interpersonal relationships than as an intrinsic symptom of ASD connected to nearly all aspects of the condition. In this theme, Schochet's intervention was centered on a School Connectedness Committee which aimed to increase feelings of social belonging as measured by the Psychological Sense of School Membership Scale (PSSM) in hopes this newfound social support would decrease depressive symptomology (Shochet et al., 2022). The other two interventions viewed aggressive behavior in ASD as a result of inadequate resilient responses to stressors. They argued that it can therefore be primarily mitigated by strengthening protective factors in resilient responses, primarily social support (Mackay, 2017; Habeyeb et al., 2017). It is important to note that aggression, like attention, is one of the most common symptoms in mental health disorders, and with ASD's high comorbidity rate, it is difficult to determine how and to what extent co-occurring disorders influence aggressive behaviors in autistic individuals. In these studies, the stated goals of treatment were not to reduce aggression but instead to increase resilience and decrease depressive symptomatology; however, according to the metrics used to measure them, such as the Children's Depression Inquiry and the Behavior Assessment System for Children, 2nd Edition (BASC-2), these goals were not met (Mackay, 2017; Habeyeb et al., 2017).

Although these studies did not develop an effective depression treatment, their reduced aggression-related results were seen as beneficial to parents and teachers dealing with what they perceived as difficult children. Mackay, Shochet, and Orr's (2017) randomized pilot trial for the prevention of depression found that their intervention had no effect on depression or emotional and behavioral functionality but that there was a significant effect in parent reports of adolescent coping efficiency. Additionally, the resilience-building program implemented by Habayeb, Rich, and Alvord (2017) to examine resilience differences across autistic children with different comorbid diagnoses reduced aggression but did not improve patient flexibility, anxiety, depression, social skills, executive functioning, or even resilience (as measured by the BASC-2). Patient self-reports were consistently less positive than parental reports in each study. It appears that the implementation and treatment content of these programs placed a stronger emphasis on guiding children to be less combative, rather than improving their psychological well-being.

Each program (Shochet et al., 2022; Mackay, 2017; Habeyeb et al., 2017) included weekly sessions that emphasized maintaining orderly and socially appropriate behavior through Social Skills Training (SST). Habeyeb et al.'s (2017) study operated on the belief that resilience in ASD populations depended on the development of what they called "social competencies." Their weekly meetings, referred to as social skills group therapy sessions, included topics such as personal space, leadership, reading verbal and nonverbal cues, initiating and maintaining conversations, and good sportsmanship (Habeyeb et al., 2017). Interestingly, the penultimate sessions in the two other studies were both titled "Keeping the Peace" (Shochet 2022; Mackay 2017). In the longest-running intervention, Schochet et al.'s (2022) school-based resilience approach, very few sessions focused on internal topics like self-talk and personal strengths, and these were not emphasized to the same degree as those covering interpersonal topics. This is likely because the intervention was developed on the belief that autistic children should direct their greatest efforts toward building support networks. Session topics like keeping calm and problem-solving, which are necessary for healthy ER, were viewed as important only in their ability to decrease conflict with peers (Shochet et al., 2022).

Social Skills Training (SST) can be an effective intervention for those on the autism spectrum, but it must be done with great care to increase meaningful social connection without encouraging the complete masking or camouflaging of autistic traits that can lead to feelings of shame and autistic burnout, a state in which those with ASD experience debilitating levels of mental, emotional, and physical exhaustion due to the constant effort required to exist in a society that often does not meet their needs (Bradley, 2021; Mantzalas et al., 2023). These SST-based RBIs may have inadvertently taught patients to use emotion regulation to avoid disruptive social behavior for the sake of others, when emotion regulation can be more meaningfully used to cope with the intensity of their own feelings in healthy ways. In the aforementioned studies (Shochet et al., 2022; Mackay, 2017; Habeyeb et al., 2017), these researchers did not account for emotion regulation as a foundational element of resilience that is essential to its operation. Instead they focused on social support, which is only a protective factor serving to strengthen pre-existing resilience.

The crux of resilience is not the strength of the stressor but the level of the reaction, and one's reaction is largely determined by their emotion regulation. Emotion regulation (ER) is the ability to modify an emotional state to promote adaptive behavior (Gross, 2015). Healthy ER helps individuals adjust the severity of their emotional response and react in ways appropriate for the situation, as those with ASD have greater difficulty with ER than the general population (Mazefsky and White, 2014). It is thought that ER impairment in ASD populations is likely due to the complex interactions between multiple ASD symptoms. These key symptoms are sensory sensitivity, psychological and behavioral rigidity, rumination, and the prevalence of alexithymia: a trait common to those with ASD wherein a person has difficulty understanding, processing, and communicating what emotions they are experiencing (Mazefsky and White, 2014).

It is important to note that ASD youth have more negative responses in frustrating situations than neurotypical youth and remain upset for longer (Mills et al., 2022). At a surface level, this may reflect poor frustration tolerance, but reframed it shows

an ASD-specific limited resilience as resilience necessitates the opposite behaviors (i.e., responding well and recovering quickly). A low frustration tolerance does not denote a weaker will. Autistic individuals experience the same levels of emotional distress as those without ASD but do so much more frequently, often as a result of the key symptoms mentioned above. The maximum amount of distress ASD youth can tolerate is determined by the strength of their ER. The stronger their ER, the better they will respond to what are often substantial daily stressors and the faster they will recover. Interventions that strengthen ER in patients with ASD should therefore increase resilience.

When working with ASD youth, one must be cognizant of the effect of impaired ER. Failure to understand that autistic children cannot always regulate their emotional state or choose their reactions can cause the child much greater psychological distress than the reaction itself. To the outside viewer, ASD-related ER impairment in children often looks like deliberate misconduct (Mazefsky and White, 2014). Adults will state that the child is unreasonably irritable, that it is impossible to know what will cause an outburst, and that they must always have their way or else they will throw a fit. These "fits" are what psychologists today most commonly call meltdowns and are rarely deliberate (Phung et al., 2021). Meltdowns are perhaps the most well-known and clearly visible examples of ASD-related ER impairment but are not the only examples as ER struggles can manifest in a variety of different ways such as autistic burnout (Bradley, 2021) and shutting down (Belek, 2018). These behaviors are unhelpful and unpleasant experiences for the child but are made worse by the reactions they are met with. These were the behaviors that previous SST-based RBIs saw as disruptive to social cohesion at best and aggressive at worst. These programs framed the autistic individual's external expression of emotion, however disproportionate, as a maladaptive behavior inhibiting healthy interpersonal relationships. This is not untrue, as frequent meltdowns can make it more difficult for ASD youth to get along with their peers. However, in the pursuit of minimizing these outbursts, SST-based RBIs may have influenced ASD youth to suppress their own feelings in order to maintain social harmony. This ultimately prioritizes the sustained upkeep of socially acceptable behavior over addressing the causes of their discomfort and their ability to communicate and cope with it effectively. This might be relevant in explaining why the ASD youth in the SST-based RBIs showed no change in their self-reports but were perceived as more amicable and cooperative by their parents and teachers.

Emotion Regulation and the EASE Program

Research on interventions to increase ER in ASD populations does not seem to be plagued by the same issues as most research on RBIs. These SST-based RBIs appeared to have a narrower perspective of resilience, focusing only on factors like social support that strengthen resilience instead of the underlying mechanisms governing it like ER. This phenomenon led to studies that did not address the root cause of behavioral problems or decrease depressive symptoms, although the participants outwardly appeared better behaved and less aggressive (Shochet et al., 2022; Mackay, 2017; Habeyeb et al., 2017). One established program, the Emotional Awareness and Skills Enhancement (EASE) Program, reduced aggressive behavior but also decreased depression and ER impairment without shaming the child. Additionally, the EASE study's alternative approach was more effective at increasing resilience through improved ER skills than the SST-based RBIs (Conner et al. 2019). Doing so presents a model of improving resilience through emphasizing mindfulness and radical acceptance, the culmination of which allows ASD youth to recognize and respond to their emotional distress in ways that benefit them through mindfulness practices and cognitive behavioral techniques (Beck et al., 2022).

The EASE program was developed from a theoretical model that aimed to combine emotional awareness, mindfulness strategies, distress tolerance, and emotion regulation strategies. These goals were worked into a 16-week program with four modules called the ABCD model wherein A stood for Awareness, B stood for Be Accepting, C stood for Change, and D for Distract (Conner et al. 2019). Each module consisted of two to four individual sessions discussing ER strategies under that umbrella topic. In addition to the sessions on the ABCD model, there were two introductory sessions to provide an overview of the program and two concluding sessions to encourage the continued implementation of the learned skills.

The first few sessions of the EASE program emphasize a mindfulness-based approach, as one cannot effectively regulate their emotions without understanding them. These sessions introduce basic somatic therapy and mindfulness exercises as a form of meditation with two goals: to be aware of one's emotions and to be aware of one's body (Conner et al. 2019). It is this action that could incidentally lead to substantially increased resilience outcomes. Resilience involves returning to positive emotions after negative experiences which can be difficult for people with ASD as they often do not know what emotion they are experiencing or how to move on from it. This process is the result of the combined effects of alexithymia and rumination respectively. Alexithymia denotes an inability to understand one's own emotions, while rumination refers to a difficult-to-escape continuous cycle of negative thoughts (Ibrahim et al., 2019). Alexithymia and rumination are common features of ASD and make resilient responses especially difficult, as emotions cannot improve if they are not readily identifiable and feelings cannot improve if they are not allowed to change. The EASE Program's results regarding ASD-related rumination are in line with previous studies, such as a 2016 systematic review that found that Mindfulness Based Interventions (MBIs) can significantly reduce rumination in adults with ASD (Cachia et al., 2016). Additionally, although it is not specifically related to those with ASD, a 2018 systematic review on the topic of MBIs in the treatment of alexithymia across four studies and 460 participants found they could

significantly reduce alexithymia (Norman et al., 2018). Even before the second treatment module, the EASE study outlined the possibility to simultaneously and holistically decrease the effect of these two harmful ASD features.

The Role of Psychological Flexibility

While the EASE training may enhance aspects of emotion regulation, it does not directly address resilience. Resiliency is often thought of as useful when adapting to large-scale trauma, but with autistic youth, seemingly insignificant adverse stimuli can elicit significant negative reactions (Black, Stevenson, and Segers, 2017). In this case, resilience would not be limited to major changes like adapting to the death of a parent or moving out of state, but instead common daily challenges like buying the wrong kind of milk, preparing food differently, and not being picked up on time. The ability to adapt to these daily changes is vital for autistic youth as greater life changes occur with age. Efforts to increase resilience in this aspect would be focused on strengthening the ability to cope with the stress of discomfort and decrease psychological inflexibility and behavioral rigidity.

Psychological inflexibility serves as a form of avoidant behavior in which individuals abstain from situations that have the potential to be stressful or unpleasant, often through the creation of strict routines marked by repetitive rigid behaviors in which the only priority is the sustained absence of discomfort (Hayes, 2019). As those on the autism spectrum experience substantial sensitivities to common stimuli such as sound, taste, and touch, the lengths they will go to avoid them can be equally substantial and lead to the major impairment of daily functioning. These rigid behaviors can manifest in children's refusal to brush their teeth because of the taste of their toothpaste, continuing to wear the same dirty clothes every day because their other clothes have irritating fabric, or avoiding social interaction because people are too loud. These rigid behaviors are rewarded and reinforced in the short term with the absence of discomfort, but the long-term negative consequences are severe (Conner et al., 2020). These avoidant behaviors often lead to chronic exhaustion, social isolation, decreased ability to cope, and failure to achieve life goals. This makes avoidance through psychological inflexibility one of the most harmful maladaptive coping mechanisms used by those on the autism spectrum. Decreasing these avoidant behaviors provides an opportunity to increase resilience in autistic youth.

Avoidant behavior is extraordinarily common in a wide variety of mental health disorders (Akbari et al., 2022). While several treatments are aimed at its reduction, the challenge comes with adapting these interventions to fit those on the autism spectrum. Fortunately, there exists a type of therapy proven to decrease avoidant behavior and in which the main aim is to decrease psychological inflexibility. Acceptance and commitment therapy (ACT) is influenced by CBT and encourages individuals to recognize their values and commit to actions in pursuit of valued life goals despite the immense difficulties necessary to achieve them (Hayes et al., 2006). Addressing psychological inflexibility is a core aspect of ACT, yet it is rarely used to treat those with ASD and, like with resilience-based interventions, has been almost exclusively used to treat the parents and caregivers of autistic youth rather than to help autistic youth themselves.

Confronting avoidant behaviors is a central component of acceptance and commitment therapy (Hayes et al., 2006). An ACT approach prompts clients to consider what they are avoiding, the beliefs that fuel their avoidance, and what opportunities are missed when they engage in that behavior. This allows clients to distinguish between maladaptive forms of avoidance, like social isolation, and simple life preferences, such as a disinclination toward overly loud or crowded spaces. The goal is not to force clients to brave dangerous or intolerable situations but to increase their sense of agency and autonomy when they have to decide whether or not to persist. Therefore, an ACT approach does not preclude measures to alleviate sensory distress or create more accessible environments for autistic youth within reason, such as allowing an ASD child with increased sensory sensitivity and social anxiety to wear their own soft clothes to gym class. While this does allow a child to avoid rough textures and some social interaction, it is a reasonable tradeoff considering how unpleasant the experience would be and how little ASD youth would have to gain. This ability to accommodate the needs of ASD youth also has the added benefit of preventing any unintentional shaming of these children for their needs.

While allowing children this type of leeway opens up the possibility of taking advantage of a teacher or caregiver's generosity, it should also be noted that unless an ASD child is having an ASD-related meltdown, it is nearly impossible to know how much stress they are under, how uncomfortable they are, or what aspects of their ASD could be affecting them at that moment. The child could be exhibiting greater personal resilience by standing under the buzz of fluorescent lights or showing immense strides in psychological flexibility by wearing a new pair of socks no one can see. Because it is difficult to know how emotionally strained a child is or how much progress they are making, teachers and caregivers must have mutually engaged conversations with deep consideration to determine what accommodations should and should not be extended to the child.

Randomized control studies testing Acceptance and Commitment Therapy for those with ASD have been primarily organized by a single team led by Dr. Johan Pahnke (Pahnke et al. 2012; Pahnke et al. 2022) and have shown promising results in the reduction of avoidant behaviors in ASD. The largest study to date exploring ACT as a treatment option for those with ASD was conducted in Sweden in 2022. The study included 39 adults with a mean IQ of 108 and a diagnosis of ASD. The subjects were split into two groups with the control group receiving standard CBT, and the experimental group receiving their specialized ACT-based intervention they titled NeuroACT. The intervention's main focus was the reduction of psychological inflexibility

through weekly group therapy with six different modules focusing on relevant topics such as stress and avoidance, acceptance and avoidance, and support of executive function (Pahnke et al., 2022). Between groups, it showed a significant reduction in psychological inflexibility, behavioral avoidance, perceived stress, and cognitive fusion as well as a significant improvement in quality of life (Pahnke et al., 2022). These positive outcomes are worthy of further research, especially considering there are so few studies investigating this kind of treatment for this population.

Future Directions

Given the efficacy of interventions such as EASE and ACT at improving emotional regulation and psychological flexibility among autistic youth, future research on resilience in those with ASD could shift its focus toward building the foundations of resilience through ER and PF targeted interventions before strengthening it with SST. NeuroACT and the EASE Program accomplished the goals that SST-based RBIs initially sought but did not achieve. An intervention pursuing the effects of the EASE Program and the benefits of the NeuroACT program could create a more comprehensive intervention that would allow youth with ASD to face everyday stressors more easily and experience greater positive outcomes for their efforts.

Resilience requires healthy coping mechanisms, and avoidance has been consistently shown to be maladaptive. To increase resilience one needs to decrease avoidance, which, within ASD populations, manifests primarily as psychological inflexibility. The NeuroACT program was effective at decreasing behavioral avoidance by increasing psychological flexibility. This is important in a resiliency study because one's ability to weather hardship cannot be determined if behavioral rigidity prevents them from facing hardship. As current research has primarily focused on adults, future steps would be to expand and adapt this treatment to younger populations with ASD. This pediatric research could examine how ACT affects PF and behavioral rigidity. Longevity studies could be implemented to see how well they persist in difficult actions over time as they gain more independence with age and therefore more opportunities to engage in behavioral rigidity without parental supervision.

There is a possibility that research into the interaction of ER and PF could create a model explaining limited resilience in those with ASD. This ASD resilience model would posit that emotion regulation is the underlying process governing resilient behavior and that psychological inflexibility is the primary maladaptive coping mechanism used by this population to avoid actions that require emotion regulation, thereby preventing opportunities for improvement. The increased difficulty those with ASD have with these mechanisms is the primary contributor to decreased resilience in individuals with ASD. This model suggests a cycle beginning with poor ER leading to the avoidance of stressors and the avoidance of stressors leading back to the atrophy of already poor ER. Therefore, the failure to recognize these cyclical factors and their interaction is why previous singularly focused SST-based RBIs for ASD youth were less successful than anticipated. ASD-focused RBIs should instead focus their efforts on treatment that would concurrently enhance ER and PF.

Successful interventions following these pillars could create a new direction for resilience-based interventions and open up new possibilities for ASD treatment, allowing for the exploration of designs of new models that better explain ASD symptomatology and their interactions. Future research could look into the bi-directionality of those two factors and eventually see how they link to other ASD symptoms. A possibility may be a three-point ASD model where difficulties in social interaction, emotion regulation, and psychological inflexibility are better understood in the context of their interaction which could make SST programs more empathetic and holistic. Having ASD youth spread their effort across these three points would take pressure off the sometimes unreasonable expectation of masking autism and wholly changing the way they interact with peers, as is often demanded by SST programs. This easing of social pressure would work concurrently with the strengthening of ER and PF to ameliorate ASD-related burnout and meltdowns while decreasing depression and avoidance. The validation of mindfulness and non-judgmental acceptance could also decrease the feelings of shame that pediatric ASD patients experience when they fail to meet the expectations of a neurotypical society, allowing those with ASD to live more fulfilling lives and decrease the challenges of their self-imposed restrictions.

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